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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,468	02/24/2005	Thomas Genger	12810-00027-US	3829

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EXAMINER	
KEYS, ROSALYND ANN	
ART UNIT	PAPER NUMBER
1621	
MAIL DATE	DELIVERY MODE
06/27/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,468	GENGER ET AL.	
	Examiner	Art Unit	
	ROSALYND KEYS	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,6-8,10 and 12-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 6-8, 10, and 12-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 1, 3, 6-8, 10, and 12-20 are pending.

Claims 1, 3, 6-8, 10, and 12-20 are rejected.

Claims 2, 4, 5, 9 and 11 are cancelled.

Response to Amendment

Claim Rejections - 35 USC § 112

The rejection of claim 12 under 35 U.S.C. 112, second paragraph, is withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3, 6, 8, 10, 12, 13, 15, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Rapoport et al. (US 3,957,876), for the reasons given in the previous office action mailed December 14, 2007.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 3, 6-8, 10, 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over S. M. Ciborowski et al. (US 3,349,007) in view of Rapoport et al. (US 3,957,876) and Luebke et al. (US 5,449,501) and further in view of W. W. Crouch et al.

(US 2,931,834) and Richard J. Lewis (Hawley's Condensed Chemical Dictionary, twelfth edition, 1993, page 1139), for the reasons given in the previous office action mailed December 14, 2007.

Response to Arguments

Rejection of claims 1, 3, 6, 8, 10, 12, 13, 15, 17 and 18 *under 35 U.S.C. 102(b) as being anticipated by Rapoport et al. (US 3,957,876)*

8. Applicant's arguments filed March 14, 2008 have been fully considered but they are not persuasive.

The Applicants argue that Rapoport et al. is not a reactive distillation. The Examiner disagrees. In the process of Rapoport et al. both reaction and separation by distillation are occurring (see column 4, lines 1-59). Oxygen is consumed in the oxidation zone (see Table I). Cyclohexane is being oxidized. The unreactants are being separated from the product. Also, the oxidation temperature is above the boiling point of cyclohexane. Thus, the ordinary skilled artisan would reasonably expect that the reaction mixture of Rapoport et al. is in the boiling state in the reaction zone. Further, as stated in the previous office action, Chen et al. (US 2004/0162445 A1), confirms that Rapoport et al. is carrying out reactive distillation, see paragraph 0006, which refers to the apparatus of Rapoport et al. as a distilling tower reactor.

The Applicants argue that support for the oxidation process of Rapoport not being a reactive distillation is that the majority of unconverted cyclohexane in the

Rapoport process is withdrawn at the bottom of the reactor through outlet port (44) together with cyclohexanol and cyclohexanone.

This argument is not persuasive because Rapoport teaches that outlet port (44) is used to remove the ***product*** continuously from the reactor (see column 4, lines 36 and 37). In Table I of Example 1, which the Applicants refer to on page 6 of the response, of the 530 parts that is fed, the majority of the 440 parts is product which contains a minor portion of unreacted cyclohexane and the majority (90 parts) of the unreacted cyclohexane is recovered in the off gas.

The Applicants argue that the Examiner has not shown that the substitution of the apparatus of Luebke for the apparatus of Ciborowski possess a reasonable expectation of success. This argument is not persuasive because Luebke teaches that the subject apparatus can be used to perform any reaction which is amendable to catalytic distillation (see column 7, lines 4-6). In general this includes any exothermic reaction which occurs primarily in the liquid phase and produces a reaction product which is less volatile than the feed compounds (see column 7, lines 6-9). The reaction of Ciborowski et al. meets this requirement.

The Examiner does not believe that the performance of the Ciborowski process would be negatively impacted by use of the Luebke column, since as discussed above Luebke teaches that in general any exothermic reaction which occurs primarily in the liquid phase and produces a reaction product which is less volatile than the feed compounds can be carried out in the subject apparatus (see column 7, lines 6-9). Further, the skilled artisan would be motivated to operate the process of S. M.

Ciborowski et al. in the apparatus of Luebke et al., since it would allow S. M. Ciborowski et al. to simultaneously perform their reaction and separation steps. The Examiner considers this to be a positive impact.

The Examiner is not proposing a substantial redesign and reconstruction of the Ciborowski apparatus, but rather a substitution of the Ciborowski apparatus with the Luebke column. The Examiner believes that the skilled artisan would have a reasonable expectation of success based upon the teaching of Luebke at column 7, lines 6-9 and the fact that the use of combined reaction/distillation in place of a separate reaction and distillation has been demonstrated to be successful, see for example Rapoport et al.

The Examiner is not asserting that it would have been "well within the capabilities of one of ordinary skill in the art" to modify the teaching of Ciborowski to encompass claim 1, but rather to modify the teaching of Ciborowski in the manner taught by Luebke, to thereby encompass the teaching of claim 1.

The Examiner disagrees that the proposed modification of the Ciborowski process does not provide a reasonable expectation of success or that the Examiner has not provided any rationale as to why persons of ordinary skill in the art would modify the Ciborowski process and apparatus according to the teaching of Rapoport, for reasons given in the previous office action as well as discussed above.

The Examiner believes that a prima facie case of obviousness has been shown. The rejections are maintained.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROSALYND KEYS whose telephone number is (571)272-0639. The examiner can normally be reached on M, R & F 5:30-7:30 am & 1-5 pm; T & W 5:30 am-4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROSALYND KEYS/
Primary Examiner, Art Unit 1621

June 23, 2008